

## CLEAN VERSION OF ABSTRACT

### SIGNAL MEASUREMENT APPARATUS AND METHOD

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#### Abstract of the Disclosure

Ground bounce measurement circuitry, integrated circuit packaging, memory circuit modules, circuit cards, and systems, and methods to form, assemble, and use them are provided. A circuit combination is disclosed which includes an integrated circuit and measurement circuit, constructed so that each may be supported by a single substrate, or enclosed within a single integrated circuit package. The integrated circuit includes a test domain having a test voltage, and a reference domain having a reference voltage. The measurement circuit is operatively connected to the reference domain and the test domain to measure the ground bounce voltage, which is the difference between the test voltage and the reference voltage. The measured value of the ground bounce voltage can then be acquired by a data acquisition system, or made immediately available for observation using instrumentation outside of the substrate or integrated circuit package environment.